Pelagic seabird report and status review of selected species occurring off the Atlantic coast of Morocco

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La connaissance de la distribution des oiseaux de mer au large de l'Afrique du nord-ouest est encore très imparfaite, avec la plupart des études faites au large du Sénégal. Nous avons examiné le potentiel pour des sorties en mer au large du Maroc à l'occasion d'une sortie d'environ 25 milles nautiques au large d'Agadir, le 24 octobre 1999. Au total, 1533 individus de 25 espèces furent notés, parmi lesquelles le Puffin majeur *Puffinus gravis*, le Puffin des Baléares *P. puffinus mauretanicus*, l'Océanite de Castro *Oceanodroma castro*, la Mouette de Sabine *Larus sabini* et la Sterne arctique *Sterna paradisaea*. Les possibilités de sorties futures pendant la même saison ainsi qu'à d'autres périodes semblent intéressantes et valent la peine d'être examinées.

Introduction

Seabird movements off the Atlantic coast of Morocco are poorly understood. However, despite relatively low coverage, the diversity of seabirds on the national list indicates the potential; even Wandering Albatross *Diomedea exulans*, Red-billed Tropicbird *Phaethon aethereus* and Masked Booby *Sula dactylatra* have been claimed but not formally accepted. The authority that monitors the national list, the Moroccan Rare Birds Committee (MRBC) or Commission d'Homologation Marocaine (CHM), has prepared a list of species for which detailed descriptions are required[1], which includes 34 seabird species. Whether this reflects relatively low observer coverage or a genuine scarcity of these species in Moroccan waters is unclear. In order to satisfy our curiosity concerning seabird occurrences off Atlantic Morocco, we pursued the possibility of a groundbreaking pelagic trip, partially inspired by the success of observations off Senegal, which shares similar offshore upwellings to Morocco. Off West Africa, upwellings occur because the prevailing wind drifts surface water offshore[2] and the subsequent nutrient loading of surface waters provides rich foraging for seabirds.

Approach

Being based near Agadir, a major port, we were ideally placed to investigate the potential for boat hire. Reference to a sea chart (No. 6227, *Du Cap Sim a l'Oued Massa*. Paris: Service Hydrographique de la Marine. 1962) indicated a suitable route north-west from Agadir beyond the western extent of Cap Rhir, itself a well-known site for land-based observations, where water depths increase rapidly from c50 m to over 1,000 m. Enquiries regarding boat hire indicated that only one craft satisfied the appropriate insurance and safety requirements of a local tourist operator. This was a catamaran (*La Maeva*), operated by a French husband and wife team (Monique and Jean Purgues, tel +212 8 844473, mobile 01158323). The boat was equipped with a Geographical Positioning System (GPS) that permitted tracking of speed, and water depth and temperature. Given wind direction and speed, we expected that by cruising at 6 knots it would take c4 hours to reach the deepest water. After protracted negotiations at the port restaurants, a quantity of assorted, rotting 'fish bits' was acquired on the evening before departure to be used as 'chum'.

The choice of date was borne of necessity through personal availability and was not based on previous records. A total of 11 people participated, including biological researchers, teachers and National Park staff, but only three had field identification skills that included experience of the major groups.

Route and methods

See Fig 1. We departed Agadir on 24 October 1999 at 07.20 hr, returning at 18.20 hr, spending 11 hours at sea. The return was in a shallow arc, meaning that we spent more time closer to land. This area was reputed to be better for cetaceans, including Killer Whale *Orcinus orca*, but none were seen. A north-west bearing (280°) was taken until c25 nautical miles from Agadir. This brought us over the deepest waters where 'chumming' was undertaken. After two hours exploring deeper waters we returned to harbour. Initially, one-hour recording periods were maintained, commencing on the hour. The first period, when leaving harbour, was 40 minutes. From 13.30 to 15.00 hrs recording periods were not maintained, as 'chumming' was performed and lunch taken. Hourly recording periods were reinstated at 15.00–18.00 hr. The final 20 minutes were in darkness.

Results

Observations of 1,533 individuals of 25 species are summarised in Table 1, including 59 unidentified individuals (45 storm-petrels, 12 small skuas and two small shearwaters) or 4% of the total. Being one of the first pelagics in Moroccan waters, it seemed likely we would encounter species previously only rarely recorded from land. We recorded nine species (denoted in bold in Table 1) requiring formal documentation. The most significant observation was the minimum 34 Madeiran Storm-Petrels *Oceanodroma castro*. Of the 45 unidentified storm-petrels a substantial proportion were probably this species.

Shearwaters and petrels

Cory's Shearwater *Calonectris diomedea* was by far the most abundant of the five shearwater species recorded, being particularly evident in the evening. Evening aggregations of shearwaters and, to a lesser extent, Northern Gannets *Sula bassana* in the relatively shallow waters (<100 m) off Agadir are conspicuous and may be regular at this time of year (CGB pers obs). Cory's Shearwaters depart the Mediterranean in October–November[6], coinciding with numbers observed off Agadir. However, the influence of late autumn storms, such as that which had recently subsided before our trip, may be significant. The 12 Great Shearwater *Puffinus gravis* were identified within the evening aggregation. Given that over 1,000 shearwaters were probably present in the bay, it is almost certain that more Great Shearwater were present. This species has previously been recorded in association with Cory's Shearwater during a heavy passage off Mediterranean Morocco, e.g. ten among 1,200 Cory's Shearwaters that passed in ten minutes on 1 November 1972[6]. It is possible that any large movement of Cory's Shearwater in late summer or autumn may contain Great Shearwaters, and the latter is probably under-recorded. Sooty Shearwater

small shearwater by Craig Robson

P. griseus was relatively scarce, with six recorded, of which three were in the evening.

Our observations of smaller shearwaters are of particular interest. We recorded 11 Manx *P. puffinus* and three Balearic Shearwaters *P. (puffinus) mauretanicus*, although some duplication may have occurred as the smaller shearwaters were also involved in the evening congregation. In addition, two small shearwaters with characters suggesting Levantine *P. (puffinus) yelkouan* were seen, but dull Manx Shearwaters could not be eliminated. Reports indicate that *P. (puffinus) mauretanicus* is probably an autumn and winter visitor to Atlantic Morocco[3] and it may summer or breed on the Chafarinas Islands, off the Mediterranean coast of Morocco[9]. Our observations from land and at sea suggest the regular occurrence of Balearic Shearwater off the Atlantic coast of Morocco, with small numbers noted in October–November and January–February. This accords with early summer dispersal from the Mediterranean in June, followed by an extended return period in October–January at least. Though the majority may spend summer and autumn off the French coast, it appears that following this some 'overshoot' the Mediterranean and subsequently return north via the Atlantic coast of Morocco. The forthcoming British Ornithologist's Union checklist[10]

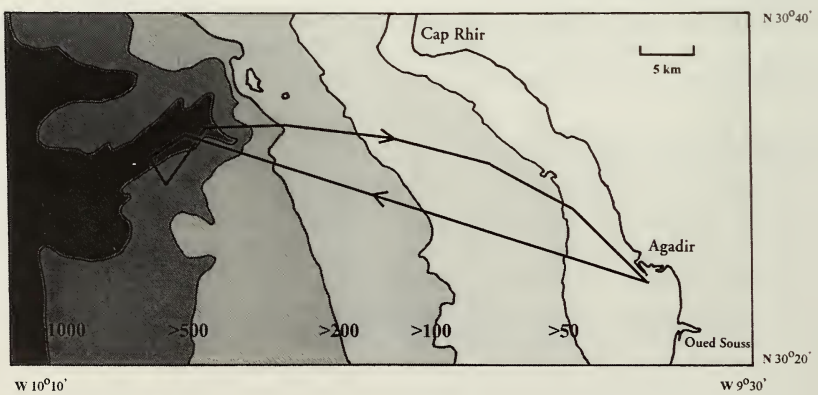


Figure 1. Approximate route of pelagic trip on *La Maeva*, 24 October 1999 from Agadir, Morocco. Approximate water depth (m) also shown.

Table 1. Recording periods and totals of all species recorded from *La Maeva*, 24 October 1999. Species requiring documentation are highlighted in bold. Distances from shore (nautical miles) and depths (m) are given, where available, to facilitate interpretation of data.

Species	harbour	08.00–09.00	09.00–10.00	10.00–11.00	11.00–12.00	12.00–12.30	'Chum'	'Chum' II	13.30–15.00	15.00–16.00	16.00–17.00	17.00–18.00	Total
Cory's Shearwater *Calonectris diomedea*	0	17	46	39	8	1	2	0	4	16	166	415	714
Great Shearwater *Puffinus gravis*	0	0	0	0	0	0	0	0	0	1	2	9	12
Sooty Shearwater *P. griseus*	0	0	0	1	0	1	0	1	0	0	3	0	6
Manx Shearwater *P. puffinus*	0	8	0	0	0	0	0	0	0	0	3	0	11
Balearic Shearwater *P. (p.) mauretanicus*	0	1	0	0	0	0	0	0	0	0	2	0	3
small shearwater sp. *Puffinus* sp.	0	0	0	0	0	0	0	0	0	0	2	0	2
Wilson's Storm-Petrel *Oceanites oceanicus*	0	0	0	0	0	0	2	1	0	0	0	0	3
British Storm-Petrel *Hydrobates pelagicus*	1	22	7	4	10	1	12	3	1	7	3	3	74
Leach's Storm-Petrel *Oceanodroma leucorhoa*	0	0	0	0	1	0	0	0	0	0	0	0	1
Madeiran Storm-Petrel *O. castro*	0	0	0	1	10	5	6	3	5	4	0	0	34
storm-petrel sp. Hydrobatidae sp.	0	0	2	3	22	10	2	0	1	1	1	1	43
Northern Gannet *Sula bassana*	0	14	11	8	6	0	3	0	7	8	65	15	138
Great Cormorant *Phalacrocorax carbo*	1	0	0	0	0	0	0	0	0	0	0	0	1
Grey Phalarope *Phalaropus fulicaria*	0	0	1	0	0	0	0	0	0	0	0	0	1
Pomarine Skua *Stercorarius pomarinus*	0	0	0	0	2	1	2	0	4	3	2	1	15
Arctic Skua *Stercorarius parasiticus*	1	2	2	1	0	0	0	0	0	0	0	3	9
small skua sp. *Stercorarius* sp.	0	4	1	0	1	0	2	0	0	1	1	2	12
Great Skua *Catharacta skua*	0	0	1	1	0	0	0	0	0	0	1	0	3
Sabine's Gull *Larus sabini*	0	0	0	0	1–2	0	2	0	4	0	0	0	7–8
Black-headed Gull *L. ridibundus*	0	0	0	0	0	0	0	0	0	0	0	14	14
Audouin's Gull *L. audouinii*	0	0	0	0	0	0	0	0	0	0	1	0	1
Lesser Black-backed Gull *L. fuscus*	300	9	21	4	5	0	15	0	0	4	6	20	384
Yellow-legged Gull *L. (argentatus) cachinnans*	1	5	1	1	0	0	0	0		0	1	6	15
Sandwich Tern *Sterna sandvicensis*	3	4	1	0	0	0	0	0	0	0	6	5	19
Common Tern *S. hirundo*	0	0	0	4	0	0	2	0	0	1	1	1	9
Arctic Tern *S. paradisaea*	0	0	0	0	1	0	0	0	0	0	0	0	1
Black Tern *Chlidonias niger*	0	0	0	0	0	0	0	0	0	0	1	0	1
Barn Swallow *Hirundo rustica*	0	1	0	0	0	0	0	0	0	0	0	0	1
Distance (nautical miles)	-	-	8.7	12.7	18.0	c25	c25	c25	c25	18.0	13.5	7.7	-
Depth (m)	-	-	78	100	250	>1,000	>1,000	c600	>1,000	110	88	66	-

Total 1,533 individuals, 1,476 of 25 species, 57 unidentified

Bulver's Petrel *Bulweria bulwerii* by Craig Robson

lists Manx as an 'uncommon passage migrant and occasional winter visitor', Balearic as an 'common passage migrant and uncommon winter visitor' and Levantine as a 'common passage migrant and rare winter visitor in the Straits'.

Storm-petrels

British Storm-Petrel *Hydrobates pelagicus* totalled 74 individuals and was seen throughout, from Agadir harbour to the deepest waters. The species has previously been recorded here, and in appreciable numbers, with over 100 at Agadir harbour, on 5 February 1998 (*Birding World* 11: 52). This may have been an effect of previous storm conditions, but in winter it does replace Wilson's Storm-Petrel *Oceanites oceanicus* as the common storm-petrel off West Africa. The 45 unidentified storm-petrels were either

Wilson's Storm-Petrel *Oceanites oceanicus* by John Cox

this species, Wilson's or Madeiran Storm-Petrels. British was the only storm-petrel species seen within 12 nautical miles of Agadir (minimum depth c100 m); 57% of storm-petrels were between 20 and 25 nautical miles offshore. The largest concentration was encountered as the water depth increased sharply from 160 m to over 500 m, 20–22 nautical miles off Agadir. Depths continued to increase markedly, to over 1,000 m, where 'chumming' was undertaken. This permitted prolonged views of storm-petrels (among other species) and confirmed the identification of at least three Wilson's Storm-Petrel. While 'chumming', Madeiran Storm-Petrel was present continuously, passing close to the boat. But, while often observed extremely well at close range, it was not seen to follow the boat or feed behind it. Given that it is described as a warm-water species[7], it is interesting to note that the water temperature that in the shallower waters had been consistently near 20°C, in the deeper waters rose by 2°C to 22°C. Madeiran Storm-Petrel is rarely recorded in Moroccan waters, though the nearest colonies are in the Canaries and Madeira. Only one record (of a single) has been accepted by MRBC since its creation in 1995[1] and our observations are therefore of some significance. Only one Leach's Storm-Petrel *Oceanodroma leucorhoa* was noted and it is probable that this species winters farther out to sea.

Gannets and cormorants

A total of 131 Northern Gannets was recorded, most within 12 nautical miles of land and half (65) in the evening shearwater congregation. Very few were seen over deeper waters, though a small number came to 'chum'. In autumn, the main passage at Gibraltar is in late August–mid-November, juveniles in late August–September preceding adults, which pass in October. A variety of ages, from juvenile to adult, was noted but counts of the different age classes were not made. It is probable that some winter off Atlantic Morocco; mostly adults are seen during land-based observations in this period (pers obs). A single Great Cormorant *Phalacrocorax carbo* was in the harbour.

Skuas

Arctic Skua *Stercorarius parasiticus* was seen only within 15 nautical miles of Agadir (as was Sandwich Tern *Sterna sandvicensis*, which is a regular victim of kleptoparasitism). As with personal land-based observations, it was recorded singly. Pomarine Skua *S. pomarinus* was the most common species, but tended to be further from land, several being attracted to 'chum'. Like Cory's Shearwater and Northern Gannet it was more frequent closer to land in the evening, when small groups were regularly noted. The species typically winters off West (and south-west) Africa, taking advantage of upwellings between Senegal and Morocco and could be expected to be the commonest species at this time of year, with most Arctic Skua perhaps having already reached the main winter quarters off south-west Africa. Three single Great Skuas *Catharacta skua* were all flying purposefully southwards and were assumed to be migrants.

Gulls

Commonest was Lesser Black-backed Gull *Larus fuscus*, principally owing to its conspicuous presence at Agadir harbour. However, it was also present up to 25 nautical miles from land, responding rapidly to 'chumming'. Like Pomarine Skua, the species may also utilise the Senegal–Morocco upwellings as feed-

White-faced Storm-Petrel *Pelagodroma marina* by Mark Andrews

ing grounds and, being opportunistic, readily approaches boats. The overlap in oceanic wintering grounds of these species has been previously noted[2]. A large fishing vessel in the far distance at our farthest point from land had a large number of gulls associated with it, of which most were probably this species. A total of 7–8 Sabine's Gull *L. sabini*, all adults with the exception of a possible juvenile, was one of the highlights of the trip. All were at least 22 nautical miles from Agadir and were in twos, apparently on migration. Four came to 'chum'. The species is rarely observed from land but it probably regularly migrates along the edge of the Atlantic Continental Shelf[4,8]. Those we observed were all in the area of marked change in water depth and though some paused briefly to feed, they appeared to be migrants following the edge of the shelf. Surprisingly, only one Audouin's Gull *L. audouinii* was seen and this relatively close to land.

Terns

A single juvenile Arctic Tern *Sterna paradisea* observed at c22 nautical miles offshore was in close proximity to the first Sabine's Gulls, and also appeared to be migrating along the edge of the shelf. The species is genuinely scarce from land, at least along the Atlantic coast but further observations are required. Several Common *S. hirundo* and Sandwich Terns were noted, the former both near and far from land. A single Black Tern *Chlidonias niger* was observed in the evening. Most had probably already reached their marine winter quarters in coastal tropical West Africa.

Great Skua *Catharacta skua* by Mark Andrews

Waders

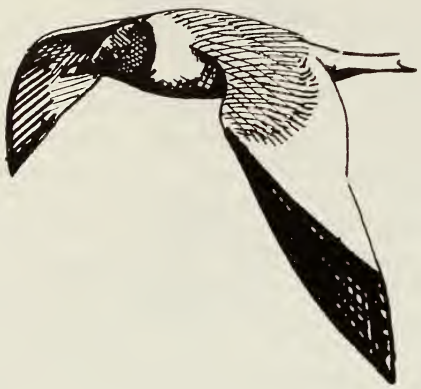
A single Grey Phalarope *Phalaropus fulicaria* was observed.

Discussion and conclusions

The practicalities of arranging the trip were inconsiderable and we hope that our preliminary observations will encourage further exploration. We found that the catamaran, while able to take a maximum of 16 people (thereby reducing the price per person) was relatively cramped with 12. In addition, its relatively low position in the water sometimes made identifications uncertain as birds were easily lost behind waves. Though it would be impossible to venture out in rough weather, we found that even calm conditions were extremely productive, especially beyond 20 nautical miles offshore. The weather, as might be expected, was bright, though an extensive fogbank (c1 nautical mile wide) was encountered c15 nautical miles from land. A heavy initial swell perhaps represented the final effects of a preceding storm, but further out the sea was quite calm and by evening the swell close to land had considerably diminished.

The storm conditions 1–2 days prior to the trip may have resulted in the large number of British Storm-Petrel inshore. Alternatively, these conditions may have enriched the already established upwelling offshore and encouraged a higher density of feeding seabirds in the area. However, we believe that of the large numbers of seabirds in deeper waters, most storm-petrels were following well-established feeding and migration routes along the deepening shelf and benefiting from upwellings along it, particularly from >150 m, and that their distribution was unaffected by the storm. Greatest diversity and numbers were not perhaps in the deepest water, but at 150–500 m, though depth changed so rapidly over a short distance that this impression may be misleading. In addition to the feeding storm-petrels, others such as Lesser Black-backed Gull and Pomarine Skua may have opportunistically taken advantage of food availability in part of their winter range, for example at our 'chum' and near large fishing vessels. Others were apparently migrating, eg Great Skua, Sabine's Gull and Arctic Tern, the Sabine's Gulls pausing briefly to visit the 'chum'.

Most observed species belong to the 'subtropical community'[2] of seabirds and the potential for other species is high. We did not see Black-legged Kittiwake *Rissa tridactyla* or any auks (Razorbill *Alca torda* is perhaps most likely) on the trip, which are representatives of the 'subpolar community' of the Northern Hemisphere and recorded regularly, though rarely, off Morocco. We found the experience of



Sabine's Gull *Larus sabini* by Mark Andrews

viewing many Madeiran Storm-Petrels at close range invaluable, and believe that given reasonable views separation from Leach's and Wilson's Storm-Petrels is relatively straightforward. Though similar numbers of Madeiran Storm-Petrels were reported on pelagics between the Canaries and Madeira, via the Salvages (*Birdwatch* October 1997), a trip from Agadir can be combined with the many other excellent birding opportunities that Morocco offers. We may have been fortunate in that our trip coincided with fledging and subsequent dispersal of Madeiran Storm-Petrel[1] and benefited from the suggested northward movement in summer of the main area of upwelling[2]. Thus, numbers of this species present at other times of year could be very different. There is a report of a White-faced Storm-Petrel *Pelagodroma marina* 25 nautical miles north-west of Agadir, on 31 March 1997[5], which along with other more unusual species, eg Little Shearwater *Puffinus assimilis*, Fea's *Pterodroma* (*mollis*) *feae* and Bulwer's Petrels *Bulweria bulwerii*, is a tantalising future possibility.

Most birding visits to Morocco focus on the landbird specialities. Given the success of our trip, we hope that tours and interested individuals will be encouraged to incorporate a pelagic into their itineraries. The evening aggregation we witnessed close inshore means that half-day, as well as full-day, trips (probably essential to see Madeiran Storm-Petrel), represent a productive option, though the extent to which season is important is unknown. Autumn (late August–late November) may be best for both numbers and diversity of species, though spring passage (March–May), or even winter are likely to be interesting.

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